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| 10/803,620      | 03/18/2004  | Krishna Singh        | 148379              | 5887             |

34132 7590 05/13/2005

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| EXAMINER |
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PALABRICA, RICARDO J

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| ART UNIT | PAPER NUMBER |
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3641

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/803,620

Applicant(s)

SINGH, KRISHNA

Examiner

Rick Palabrica

Art Unit

3641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/7/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Applicant's 4/7/05 amendment of claim 17 and election without traverse of invention I, with claims 1-30 readable thereon, is acknowledged.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "positioned below grade" in line 3 and "below grade outlet" in line 5. The claim is directed only the subcombination "system" and not to the combination of the system and the ground to which the attribute, "grade", applies. There is insufficient antecedent basis for the "below grade" limitation in the claim.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3641

2. Claims 1, 3, 7, 8, 18, 19, 24, 25, 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Yamanaka et al. (U.S. 5,753,925), Parker (U.S. 4,971,752) or Breckenridge (U.S. 3,111,078).

Yamanaka et al. disclose a radioactive waste storage facility (see Figs. 1-12). Applicant's claim language reads on Yamanaka et al.'s invention as follows: a) "body having a cavity with a major portion positioned below grade" reads on dry storage facility 38; b) "inlet ventilation duct extending from above grade inlet to a below grade inlet" reads on the combination of air intake port 11 and entrance duct 19 (see also col. 7, lines 13+).

As to claim 7, at least a portion of the combination of intake port 11 and entrance duct 19 is insulated from the upper part of body 38 by air, which is an insulator (see right hand side of Fig. 1).

As to claim 8, at least a portion of the cavity is insulate from the body by particle board 14 (see col. 8, lines 32+).

As to claims 18 and 19, there is a lid that covers the cavity of the storage facility 38 (see Fig. 1).

As to claims 24 and 25, there is concrete slab 8 on which the body (facility 38) is positioned (see also col. 7, lines 4+).

Parker discloses an underground nuclear power station (see Figs. 1-3). Applicant's claim language reads on Parker's invention as follows: a) "body having a cavity with a major portion positioned below grade" reads on underground facility 3; b)

Art Unit: 3641

“ventilation duct extending from above grade inlet to a below grade inlet” reads on the ventilation system 40, 41, 42 (see also col. 3, lines 44+, and col. 5, lines 25+).

As to claim 7, at least a portion of inlet pipe 40 is insulated from the body by the intervening underground material (see right hand side of pipe 40 in Fig. 2).

As to claim 8, a concrete wall 120 insulates at least a portion of the body from the cavity that contains reactor system 14.

As to claims 18 and 19, there is a lid 18, 27 that covers the cavity.

As to claims 24 and 25, there is concrete slab 2 on which the body (facility 3) is positioned (see also col. 3, lines 13+).

(Examiner’s note: A pressure vessel that is inherently present in reactor system 14 becomes a canister for storing spent fuel at the end of the life of Parker’s reactor).

Applicant’s claim language reads on Breckenridge’s invention as follows: a) “body having a cavity with a major portion positioned below grade” reads on underground shelter 10, including the horizontal and vertical access means; b) “ventilation duct extending from above grade inlet to a below grade inlet” reads on the ventilating duct 17 (see also col. 2, lines 13+).

As to claim 7, at least a portion of inlet pipe 17 is insulated from the body by the intervening underground material (see left hand side of pipe 17 in Fig. 1).

As to claim 8, a reinforced concrete wall insulates at least a portion of the body from the cavity (see vertical and horizontal access in Fig. 1).

Art Unit: 3641

As to claim 18 and 19, there is a lid 16 positioned atop the body and covers the cavity (see also col. 2, lines 10+).

As to claims 24 and 25, there is concrete slab on which the body (facility 3) is positioned (see Fig.1).

The claims are replete with statements that are either essentially method limitations or statements of intended or desired use. For example, "positioned below grade", "for storing spent nuclear fuel", "for receiving and storing a spent fuel canister", "wherein when a spent fuel canister is positioned ...", "the shell and inlet ventilation duct connected by welding", "for allowing heated air to exit the cavity", etc. These clauses, as well as other statements of intended use do not serve to patently distinguish the claimed structure over that of the reference, as long as the structure of the cited references is capable of performing the intended use. See MPEP 2111-2115.

See also MPEP 2114 that states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531.

[A]pparatus claims cover what a device is, not what a device does."  
Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525,1528.

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

Art Unit: 3641

Any one of the systems in the cited references is capable of being used in the same manner and for the intended or desired use as the claimed invention.

3. Claims 1, 3, 5 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Makhmutov et al. (RU 2168022C).

The claims read on Makhmutov et al. invention when the mine becomes abandoned. They disclose an underground body with cavity 4, two inlet ventilation ducts 6 and 3, an outlet near the bottom of cavity 4, and an outlet ventilation duct 5 for allowing heated air to exit the cavity.

4. Claims 1-3, 9-12, 18, 19, 21, 24, 26, 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by either one of Rogers (U.S. 3,111,586) or Kok et al. (U.S. 4,663,533).

Rogers discloses a shipping cask and Kok et al. al. disclose a storage and shipping cask.

The claims are to directed to an apparatus and not to a method. The limitation "positioned below the grade", e.g., in claim 1 is a method limitation. Either one of Rogers or Kok et al. 's device is capable of being positioned such that a major portion of the body is below grade.

Also, the limitations, "inlet" in the phrase "inlet ventilation duct" and "outlet" in the phrase "outlet ventilation duct" are not structural limitations; they are statements of

Art Unit: 3641

intended use. Either one of the two ducts in Rogers or Kok et al. can be used either as an inlet duct or an outlet duct.

5. Claims 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Rogers who discloses two ventilation ducts (see Fig. 2).

6. Claims 1-5, 13, 18, and 21- 23 are rejected 35 U.S.C. 102(b) as being anticipated by Chaudon et al. (U.S. 4,834,916), who discloses an apparatus for dry storage of radioactive waste materials (see Figs. 1-5).

As to claim 5, Chaudon et al. disclose an embodiment where there are two air cooling ports for a single cavity containing multiple containers of radioactive materials (see Fig. 3 and col. 4, lines 40+). Applicant's claim language "ventilation ducts" reads on the two layers or columns of air leading to these two air cooling ports.

As to claim 18, Applicant's claim language "lid" reads on the covering over the cavity 11, including the extraction pipe 28 (see Figs. 4 and 5).

As to claims 22 and 23, note that the outlet ventilation extends through the side of extraction pipe 28, and this outlet duct is circumferentially and azimuthically separated from inlet 30.

7. Claims 2, 4, 5, 6, 10, 14-17 are rejected 35 U.S.C. 102(b) as being anticipated by Yamanaka et al. (see Fig. 1).



As to claim 4, note from Fig. 1 that the gap between hanging storage tube 6 and slab 9 inherently forms an inlet ventilation duct, in addition to the duct formed by elements 11 and 19.

As to claim 5, inlet duct 11 and 19 forms an S shape.

As to claim 6, an inlet ventilation duct is inherently formed when the left-most storage tube is hanging, just like the tube shown as hanging in Fig. 1. The resulting gap between the hanging tube and its associated slab forms a ventilation duct on the opposing side wall of the body 38.

As to claim 10, there is inherently a water proofing membrane for the underground, concrete structure of body 38, which membrane reads on Applicant's hermetic seal.

As to claims 14-17, Applicant's claim language "support block" reads on Yamanaka et al.'s vibration limiting member 16. This member is inherently made of steel to withstand the weight of the canister 6. Note also from Fig. 2 the same cross-hatching of the drawings of canister 6 and member 16. Examiner interprets claim 16 as specifying a circumferential configuration where the support block is only one and not a plurality of support blocks.

8. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by either one of Yamanaka et al. or Breckenridge who discloses the body being made of concrete (see Fig. 1 Yamanaka et al. or see Breckenridge, col. 2, lines 5+).

Art Unit: 3641

9. Claims 21 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Parker (see col. 3, lines 49+).

10. Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by any one of Yamanaka et al. or Rogers or Kok et al. One can find a plurality of "6-36 inches of the body's height" of Yamanaka et al.'s body 38 that is above grade. Any strip along the wall of body 38 that is between 6 and 36 inches in length meets the claim language. The same applies to Rogers or Kok et al.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Rogers or Kok et al. in view of Singh et al. (U.S. 6,718,000 B2). Rogers or Kok et al. disclose the Applicant's claim except for the shear ring on the lid.

Singh et al. ('000) teaches an overpack for a spent fuel canister, said overpack comprising a lid seal ring that restricts lateral movement of the lid with respect to the body of the overpack (see col. 2, lines 60+).

One having ordinary skill in the art would have recognized that all three references are in the same field of endeavor, i.e., storage and/or shipping of spent

Art Unit: 3641

nuclear fuel. It would also have been obvious to this artisan modify the apparatus, as disclosed by Rogers or Kok et al. , by the teaching of Singh et al. ('000), to use a shear ring on the lid, to gain the advantages thereof (i.e., restrict lateral movement of the lid), because such modification is no more than the use of a well known expedient in the nuclear art.

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka et al. in view of Singh et al. (U.S. 6,519,307 B1). Yamanaka et al. disclose the Applicant's claim except for the vent screen.

Singh et al. teaches a ventilated storage facility for spent nuclear fuel that uses a vent screen to keep animals, insects and debris from entering the ventilation ducts (see elements 22, 23 in Fig. 1 and col. 3, lines 4+).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by Yamanaka et al., by the teaching of Singh et al. ('307), to cover the intake port with a screen, to gain the advantages thereof (i.e., avoid entry of undesired items in the ventilation duct), because such modification is no more than the use of a well known expedient in the nuclear art.

13. Claims 9, 11, 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka et al. in view of Waltersdorf et al. (U.S. 4,649,018).

Art Unit: 3641

Yamanaka et al. disclose the Applicant's claims except for the steel lining for the cavity and inlet ventilation duct.

Waltersdorf et al. teach a container for spent fuel elements, comprising metal lined chambers where the elements are disposed and metal-lined air cooling ducts (see Figs. 1-3). They further teach that it is advantageous to have the chambers lined with steel to provide long working life (see col. 2, lines 21+). They also teach lining the cooling air ducts with metal to obviate splitting-off or breaking-off of pieces from the concrete surfaces of the ducts (see col. 2, lines 45+).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by Yamanaka et al., by the teaching of Watersdorf et al., to provide a metal lining for the cavity (e.g., to provide long service life) and for the inlet ventilation duct (e.g., to avoid concrete flaking), because such modification is no more than the use of a well known expedient in the nuclear art.

### ***Claim Objections***

14. Claims 11 and 16 are objected to because of the following informalities: a) the word, "the" after inlet on the second line of claim 12 is misplaced; b) claim 16 is dependent from claim 15 that admits to a single support block; however, claim 16 only pertains to a plurality of support blocks. Appropriate correction is required.

Art Unit: 3641

***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References F and G further illustrate prior art..

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:30-5:00, Mon-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJP  
May 10, 2005

*R Palabrica*